SECTION II. INSTALLATION

10.2.1 INTRODUCTION

The rain gauge is a relatively simple, single-unit sensor that mounts directly on a sensor pedestal at the site. The only preparation required is assembly of the support stand, installation of the tipping bucket switch, and installation of the tipping bucket. The only cabling required is the connection of heater power and one fiberoptic signal line.

10.2.2 INSTALLATION

Installation procedures for the rain gauge are provided in table 10.2.1. Figure 10.2.1 provides an illustration of the tipping bucket and tipping bucket switch installation. Locational drawings of the wind shield and the fiberoptic transmitter are provided in Section I of this chapter. A wiring diagram for the sensor is provided in Section IV of this chapter.

Table 10.2.1. Liquid Precipitation Accumulation Sensor Installation Procedures

Step	Procedure
	Tools required: 15/16-inch wrench Small flat-tipped screwdriver Digital multimeter (DMM) Large flat-tipped screwdriver Large adjustable wrench **WARNING** Death or severe injury may result if power is not removed from sensor prior to maintenance activities. Ensure that heater circuit breaker (located in DCP) supplying power to sensor is set to off (right) position.
1	Inside DCP equipment cabinet, ensure that circuit breaker on rain gauge circuit breaker module is set to off (right) position.
2	Using 15/16-inch wrench, install four 5/8 - 11 bolts, flat washers (two places), lockwashers, and nuts securing rain gauge base plate and windshield mounting plate (if required) to sensor pedestal.
3	Install three 1/4 - 20 hex head bolts and flat washers securing three sensor legs to sensor base plate. Do not tighten legs to base plate. Legs should be free to rotate and will be tightened after lower case is installed.
4	Using small flat-tipped screwdriver, remove Bottom Plate A2A2 from Lower Case A2.
5	At flexible conduit for rain gauge pedestal, remove large nut from end of conduit using large adjustable wrench. Ensure that gasket (rubber gasket with metal gasket holder) is in place on metal conduit cap (rubber gasket toward sensor).
6	Route ac wiring and fiberoptic cable from DCP through wiring hole (not the center drain hole) in Bottom Plate A2A2 and slide threaded end of flexible conduit cap through same hole. Using large adjustable wrench, secure flexible conduit to bottom plate by attaching nut to conduit cap.
7	Apply thin coat of DC-4 anti-corrosion compund to connector pins in cable connector between collector assembly and lower case pins.

Table 10.2.1. Liquid Precipitation Accumulation Sensor Installation Procedures -CONT

Step	Procedure
8	Connect heater ac wiring from DCP to terminal block (Figure 10.4.1) on Bottom Plate A2A2 as follows: Wire — Terminal Jumper — 1 to 2 Green (ground) — 3 Red (ac line) — 4 Yellow (ac neut) — 5
9	Connect fiberoptic cable from DCP to Transmitter Board A2A2A1 on Bottom Plate A2A2.
10	Install Bottom Plate A2A2 on Lower Case A2.
11	Position Lower Case A2 on sensor support legs.
12	Secure sensor earth ground to grounding stud on Bottom Plate A2A2.
13	Install six 1/4 - 20 hex head bolts and jamnuts (two each leg) in holes in leg supports on lower case
14	Level lower case and secure in position by tightening six 1/4 - 20 hex head bolts and jamnuts as necessary.
15	Mount Tipping Bucket Frame A2A1 to top of lower case.
16	Install two 8-32 X 5/8 screws and washers securing Tipping Bucket Frame A2A1.
17	Adjust Tipping Bucket Frame 2MT6A2A1 using a level and adjust legs if required. **CAUTION** Tipping bucket mercury switch is very sensitive. Care should be taken when moving switch to keep the wire leads up to avoid getting the mercury pool stuck in top of switch.
18	Mount tipping bucket on tipping bucket frame with magnet facing switch.
19	Tip bucket several times by hand to ensure that it moves freely. As the bucket tips and the magnet passes the switch, a momentary contact occurs in the switch. Visually inspect the magnet during tipping to ensure that it passes within 0.25 inch of the switch but does not contact the switch. (Adjust switch position, if necessary, to achieve required spacing.)
20	Connect an ohmmeter between the two output connectors on the back of the reed switch.
21	While tipping the bucket by hand, observe the ohmmeter. As bucket tips, magnet should cause switch to momentarily close and then open, causing the ohmmeter output to display a momentary short circuit reading. Ensure that switch operates properly for both tipping directions. If switch does not close and open properly, adjust by moving up or down in bracket and adjust bracket by loosening screws securing bracket to frame.
22	Using collector locating pin and alignment arrow on lower case as a guide, mount collector on lower case and tighten two retaining knobs on sides of lower case.
23	If sensor is equipped with wind shield, perform the following: a. Install three windshield support poles to windshield base plate by sliding poles over three base plate pins. b. Obtain three nylon sections of windshield, three sections of bottom ring, and three sections of top ring. **NOTE** Top side of each nylon section is side where individual nylon strips are widest. c. Slide one section of top ring through top of each section of nylon shield. d. Slide one section of bottom ring through bottom of each section of nylon shield.

Table 10.2.1. Liquid Precipitation Accumulation Sensor Installation Procedures -CONT

Step	Procedure
	e. Using large flat-tipped screwdriver, loosen two setscrews in connector at the top of each support pole. f. Install top ring of one wind shield section into connectors at top of support poles. Secure each end of section by tightening two setscrews. Repeat for other two sections of wind shield. g. Install bottom ring of windshield by sliding each section into a bottom section of the windshield. Connect all three bottom ring sections together and tighten all setscrews.
24	Inside DCP equipment cabinet, set circuit breaker on rain gauge circuit breaker module to on (left) position.
25	Check tipping bucket calibration in accordance with table 10.5.1.

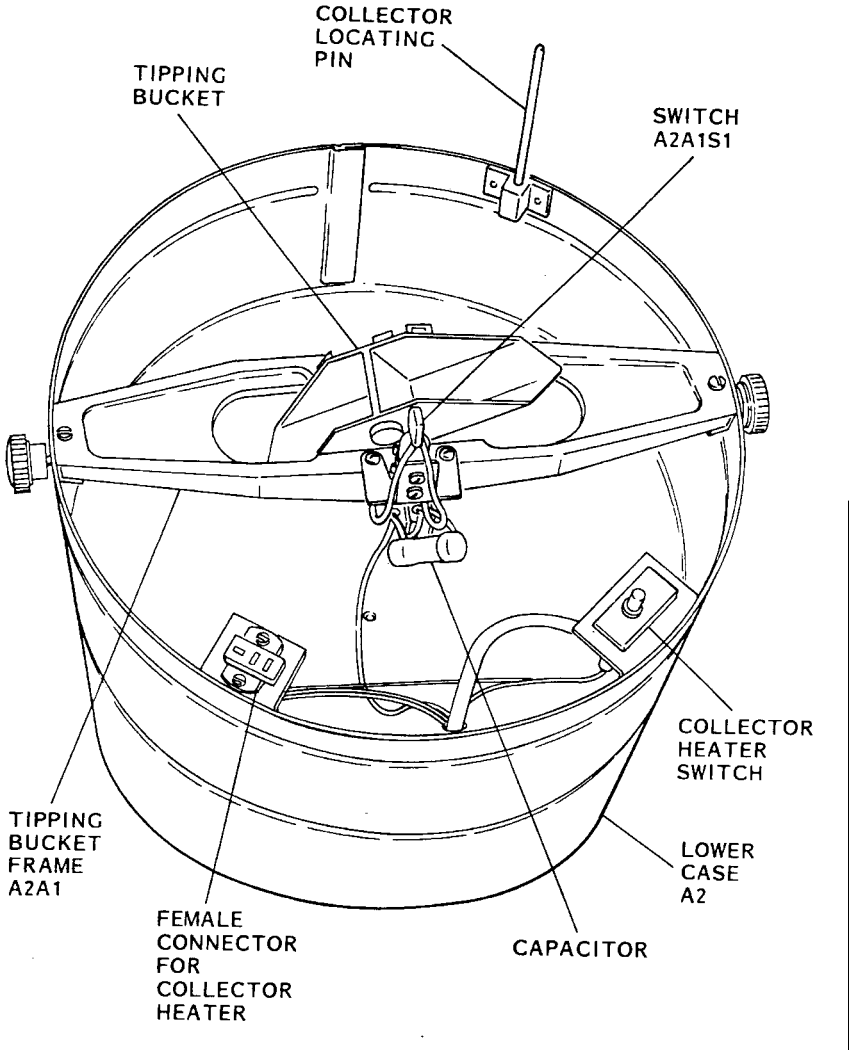

Figure 10.2.1. Tipping Bucket Installation